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10/565,519	04/09/2007	**Johannes Benedikt**	107687.00019	2958

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EXAMINER	
HE, AMY	

ART UNIT	PAPER NUMBER
2831	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/565,519	BENEDIKT ET AL.	
	Examiner	Art Unit	
	AMY HE	2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-13,25,28-30 and 34-37* is/are allowed.

6)☒ Claim(s) *14-24,27 and 31-33* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 14-22, 27 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Ferrero (U. S. Patent No. 6, 509,743).

As for claim 14, Ferrero discloses an active load pull circuit for use in an analyser for measuring at frequencies within a frequency range (500MHz to 110GHz, see claim 1 ; or the frequency range of the band filter Rf) the response of an electronic device (E) to a high frequency input signal, the active load pull circuit being connectable in use to a device to be analyzed (E) and including a feedback circuit (see the feedback loop in right-hand side of Fig. 4 and Fig. 6) arranged to receive an output signal from the device to be analyzed(E), to modify the signal (using the band filter Rf, amplifier Am, and phase and magnitude control system represented by variable attenuator Ra and a variable phase shifter Rs), the modification including limiting the magnitude gain of the feedback circuit at frequencies outside the range of frequencies(i.e., all frequencies including frequencies outside the band of frequencies are limited/modified with a gain), and to feed the modified signal back to the device to be analyzed(E), wherein the feedback

circuit is arranged to limit the magnitude gain of the feedback circuit at all frequencies within the frequency range(col. 5, lines 12-55; right-hand side of Fig. 4; Fig. 6).

As for claim 16, Ferrero discloses a method of measuring the response of an electronic device (E) to a high frequency input signal, the method including the steps of:

providing an electronic device to be analyzed (E),

applying a high frequency signal to the device(E), and

modifying (using the band filter Rf, amplifier Am, and phase and magnitude control system represented by variable attenuator Ra and a variable phase shifter Rs) an output signal from the device, the modification including limiting the magnitude gain of the feedback circuit at frequencies outside a band of frequencies(i.e., all frequencies including frequencies outside the band of frequencies of the band filter are limited/modified with a gain), and then feeding the modified signal back to the device, thereby forming a feedback loop (see the feedback loop as shown in the right-hand side of Fig. 4 and Fig. 6), and

measuring (by using the measurement device Sm), at a plurality of frequencies within a frequency range(500MHz to 110GHz, see claim 1), the response of the device to the signal applied to the device, wherein the magnitude gain of the feedback loop is controlled at frequencies inside the frequency range(col. 5, lines 12-55; right-hand side of Fig. 4; Fig. 6).

As for claim 15, Ferrero discloses the analyser according to claim 1, wherein the analyser is so arranged that the magnitude gain and the phase change of the feedback circuit at one or more frequencies within the frequency range is able to be adjusted

(using the phase and magnitude control system represented by variable attenuator Ra and a variable phase shifter Rs , as shown in right-hand side of Fig. 4).

As for claim 17, Ferrero discloses that the phase change effected by the feedback loop is restricted at frequencies within the frequency range (by using the variable phase shifter Rs).

As for claims 18-20, Ferrero discloses a step of preselecting the way in which the output signal from the device is modified; or preselecting a magnitude gain applied to the output signal from the device; or preselecting a phase change applied to the output signal from the device (i.e., by preselecting the phase shifter or variable attenuator to be used in the feedback circuit design).

As for claim 21, Ferrero discloses that the step of modifying the output signal from the device includes filtering (using band filter Rf) out signals having frequencies outside a band of frequencies covering frequencies within the frequency range.

As for claim 22, Ferrero discloses that the fundamental frequency of the signal applied to the device can be over 1 GHz (see claim 1).

As for claim 27, Ferrero discloses a method according to claim 16, wherein the method is performed with an analyzer, the analyser including:

an active load pull circuit connectable in use to a device to be analyzed, the active load pull circuit including a feedback circuit (see the feedback circuit as shown in Fig. 4 and 6) arranged (i) to receive an output signal from the device to be analyzed (E), (ii) to modify the signal (using the band filter Rf, amplifier Am, and phase and magnitude control system represented by variable attenuator Ra and a variable phase shifter Rs)

and (iii) to feed the modified signal back to the device to be analyzed(E), wherein the feedback circuit is arranged to limit the magnitude gain of the feedback circuit at all frequencies within the frequency range (col. 5, lines 12-55; right-hand side of Fig. 4; Fig. 6).

As for claim 31, Ferrero discloses (see the right-hand side of Fig. 4 ; Fig. 6; claim 1) an analyser for measuring the response of an electronic device to a high frequency input signal, the analyzer including:

an active load pull circuit connectable in use to a device to be analyzed (E), the active load pull circuit including

a feedback circuit (see the feedback circuit as shown in Fig. 4 and 6) arranged (i) to receive an output signal from the device to be analyzed (E), (ii) to modify the signal (using the band filter Rf, amplifier Am, and phase and magnitude control system represented by variable attenuator Ra and a variable phase shifter Rs), the modification including limiting the magnitude gain of the feedback circuit at frequencies (e.g. at frequencies from 500MHz to 19GHz) outside a band of frequencies (e.g., assumes that the band of frequencies is 20-110GHz, since applicant fails to specifically define the band of frequencies)and (iii) to feed the modified signal back to the device to be analyzed(E), the modified signal fed back comprising a component having a frequency within said band (e.g., 20-110GHz), and (iv) the feedback circuit is arranged to limit the magnitude gain of the feedback circuit at frequencies inside the band of frequencies (e.g., 20-110GHz).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 23, 24, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrero (U. S. Patent No. 6, 509,743).

As for claims 23 and 24, Ferrero discloses the method according to claim 16. Ferrero does not specifically disclose that the method is repeated and performed in respect of multiplicity of different modifications of the output signal from the device, or of the different input signals applied to the device. A person of ordinary skill in the art would find it obvious at the time of the invention to modify Ferrero to repeat and perform the method in respect of multiplicity of different modifications of the output signal as desired, or of the different input signals applied to the device, dependent upon the different applications on hands, for the purpose of analyzing the device with respect to different input/output conditions.

As for claims 32 and 33, Ferrero discloses the analyzer and a method of measuring according to claim16 as discussed above. Ferrero does not specifically disclose a method of improving the design of a high frequency high power device or a method of manufacturing a high frequency high power device, including the steps of analyzing the behavior of the device by performing the method of claim 16, and then

modifying the design of the device in consideration of the results of the analyzing; and then manufacturing the device or the circuit in accordance with the improved design. A person of ordinary skill in the art would find it obvious at the time of the invention to modify Ferrero to disclose analyzing the behavior of the device performing the method of claim 16, and then modifying the design in consideration of the results, and then manufacturing the device in accordance with the improved design, so as to make use of the analyzer device of Ferrero and improves on the device when needed.

Allowable Subject Matter

3. Claims 1-13, 25, 28-30 and 34-37 are allowed.

4. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

Claims 1-13, 25, 28, 29 are allowable because none of the prior art discloses or fairly suggests an analyzer for measuring the response of an electronic device to a high frequency input signal, the analyzer including: an active load pull circuit including a feedback circuit arranged to modify the signal, the modification including limiting the magnitude gain of the feedback circuit at frequencies outside a band of frequencies to essentially no magnitude gain, and to control the magnitude gain of the feedback circuit

at frequencies inside the band of frequencies to other than essentially no magnitude gain, and in the combination as claimed.

Claims 26, 36 and 37 are allowable because none of the prior art discloses or fairly suggests a calibration method comprises repeating for a multiplicity of different loads: measuring, at a plurality of frequencies within a frequency range, the modified signal at the input, calculating the load represented by the feedback loop or feedback circuit, and storing the results of the measurement against the modifications to the signal, and in the combination as claimed.

Claim 30 is allowable because none of the prior art discloses or fairly suggests an analyzer for measuring at frequencies within a frequency range the response of an electronic device, the analyzer including: a feedback circuit arranged to downconvert the signal received to a low frequency signal, to modify the low frequency signal, to upconvert the modified signal to a modified high frequency signal, and in the combination as claimed.

Claim 34 is allowable because none of the prior art discloses or fairly suggests an analyzer for measuring the response of an electronic device, the analyzer including an active load pull circuit including a feedback circuit comprising a heterodyne filter ring circuit, wherein the heterodyne filter ring circuit arranged that in use it receives an input at the first mixer together with a signal having a preselected frequency, and the output from the first mixer is sent via the signal-modifying unit to the second mixer, where it is combined with a signal having a frequency equal to the preselected frequency to

produce the output signal of the heterodyne filter ring circuit, and in the combination as claimed.

Claim 35 is allowable because none of the prior art discloses or fairly suggests a an analyzer for measuring the response of an electronic device, the analyzer including an active load pull circuit including a feedback circuit includes a signal processor able to modify the signal from the device to be analyzed by a preselected amount, the signal processor is arranged to process respective signals representative of the I and Q values of a signal, and in the combination as claimed.

Response to Arguments

6. In response to applicant's argument regarding claims 14-24, 27, and 31-33, the examiner asserts that Ferrero does disclose modifying/limiting the gain of the feedback circuit at frequencies outside the range of frequencies. In other words, the signal is first modified with a gain, then band filtered as seen in Fig. 4 or 6 of Ferrero. Therefore, all frequencies in a range of the signal are modified with a gain, and this range of frequencies includes frequencies outside the pass band of the band filter.

Futhermore, since applicant fails to specifically define the band of frequencies, it can be assumed that the band of frequencies is any range, e.g., 20-110GHZ, so Ferrero does disclose that the modification including limiting the magnitude gain of the feedback circuit at frequencies (e.g. at frequencies from 500MHz to 19GHz) outside a band of frequencies (e.g., 20-110GHz)and the feedback circuit is arranged to control the

magnitude gain of the feedback circuit at frequencies inside the band of frequencies (e.g., 20-110GHz).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMY HE whose telephone number is (571)272-2230. The examiner can normally be reached on 9:30am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Amy He/
Primary Examiner, Art Unit 2831